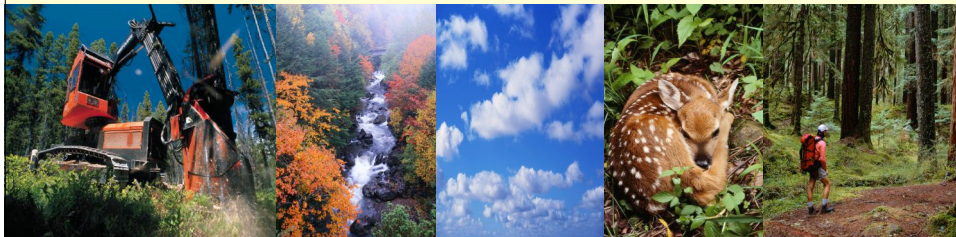


Forest Carbon Offsets & Banking within the Chicago Climate Exchange



Ecosystem Markets: From Priceless to Valuable

April 25, 2007

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Forecon's Forest Carbon Asset Management Services

- **Forecon, Inc** is an approved Chicago Climate Exchange (CCX) Forest Offset Verifier
- **Forecon EcoMarket Solutions** is a CCX Aggregator
 - Forest Carbon Asset Valuation, Forecasting, and Analysis
 - Forest Carbon Offset Project Development
 - Forest Carbon Accounting System Development
 - Carbon Credit Registration, Trading, and Banking

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Topics Covered

- Brief Introduction - the Global and US Response to climate change mitigation
- A Forest Carbon Offset Test Case for a Sustainably Managed Forest
- Addressing Challenges for Forest Carbon Offset Projects

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Intergovernmental Panel on Climate Change - Climate Change 2007 Report

- With more than 90% confidence, CO₂ and other heat trapping GHG's from human activities were the main drivers of global warming since 1950.

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Stern Review on the Economics of Climate Change - 2006

- Notes that 18% of total annual GHG emissions now come from deforestation – an amount greater than the global transportation sector.

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The Global Solution

■ The Kyoto Protocol

- The Kyoto Protocol is an agreement under which 39 industrialized countries will reduce their collective emissions of greenhouse gases by 5.2% by 2012 compared to the year 1990 (29% cut vs. projections for the period).
- Introduced in December of 1997 in Japan and entered into force on February 16, 2005

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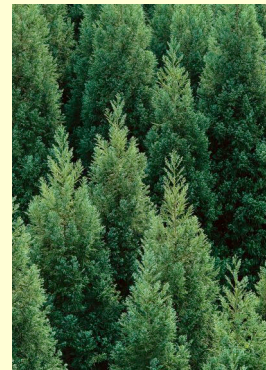
The U.S. Response

- February 2002, President Bush committed to reducing national GHG intensity by 18% by 2012. This led to the revised National Voluntary GHG Reporting Program under Section 1605(b) of the Energy Act of 1992. (Federal Register April 2006)
- The absence of an international or national mandatory program has led to the development of many voluntary federal, state, and regional Registries.
- DOE 1605(b), CCAR, CCX, RGGI, Midwest, Western States, Multistate (March 2007)
- Forest offset project rules are different for all Registries.

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Forestry Offset Projects

- Afforestation: Establishing trees on sites that have not been forested historically and have been planted since January 1, 1990.
- Reforestation: Restoring native cover (trees) in areas that have been out of forest cover.
- Sustainably managed forests: Managing a working commercial or NIPF forest that produces harvested forest crops in a manner that sequesters additional carbon over time.
- Forest Conservation: Projects that take specific actions to prevent the conversion of native forests to a non-forest use. Avoided deforestation.



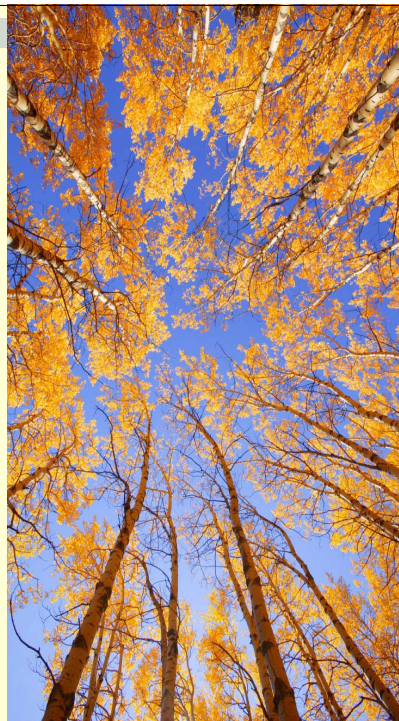
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A Forest Carbon Offset Test Case for a Sustainably Managed Forest

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■ Goal:

To establish the carbon baseline and analyze the actual performance of a sustainably managed hardwood forest as a forestry offset project under CCX rules (exchange platform).

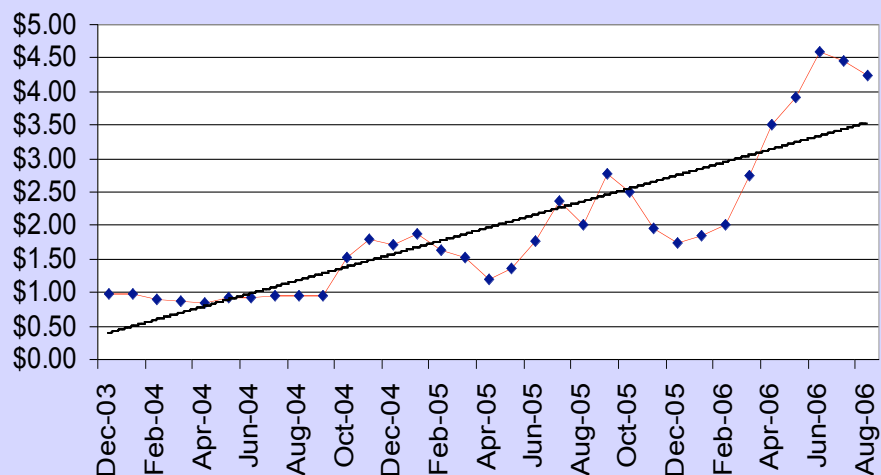


Chicago Climate Exchange

- CCX is the world's first and North America's only voluntary, legally binding rules-based greenhouse gas emission reduction and trading system.
- The CCX now has over 270 members including companies such as; Rolls Royce, Dow, Dupont, Ford, IBM, Temple-Inland, IP, Mead Westvaco, Stora Enso, Sony, and Kodak, cities like Chicago, and universities.
- The CCX has expanded, creating the NYCX, MCeX, ECX, ICX (in development).

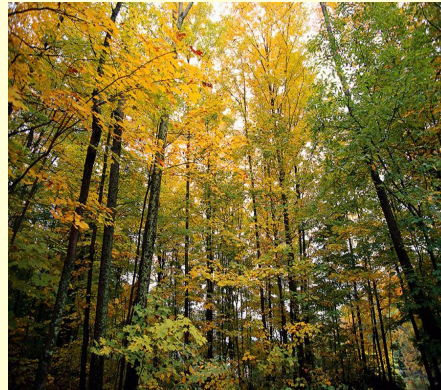
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CCX Price Per MtCO₂e Since Inception (95.7% Price Appreciation)



The K Tract

- 9,065 contiguous acres of managed hardwood and mixed forest in the northeastern US
- 8,790 acres of forested stands
- Largely an even aged management regime. (shelterwood systems)
- Annual harvest is approximately 40% of growth
- Privately owned



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The Test : *How would the K tract have performed as an offset project since 2001, if the landowner had participated as an offset provider to the CCX without changing their management plan?*

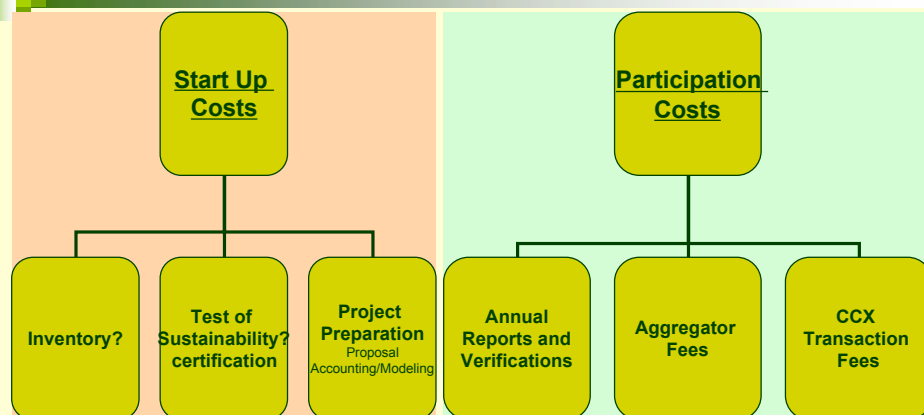
- Established the carbon baseline in 2001 for the K tract based on CCX rules and a forest inventory at a high level of precision (95% CI, +/- 10% of true mean volume per acre).
- Growth was modeled using the CCX approved TWIGS growth model, through the Forecon Inc. TIGER database system.
- Harvest volumes were deducted annually
- The net carbon stocks on the tract were tracked for a six year period from 2001 through 2006.

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Assumptions

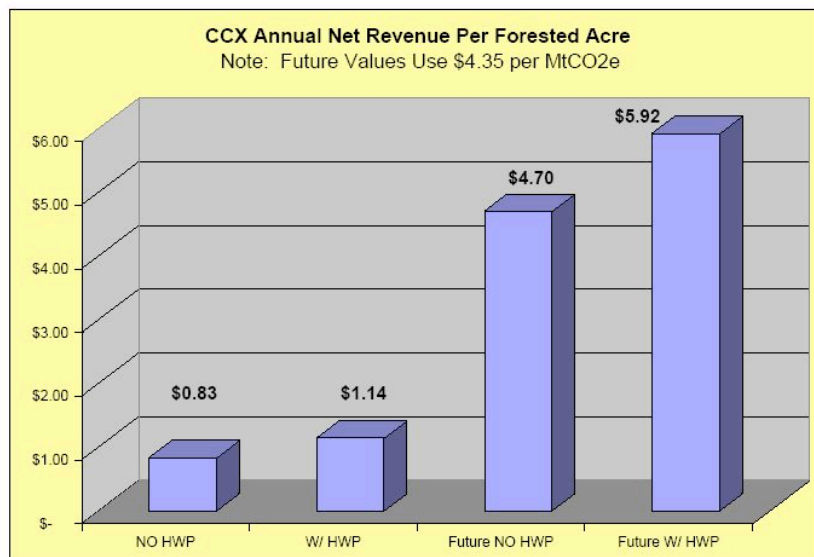
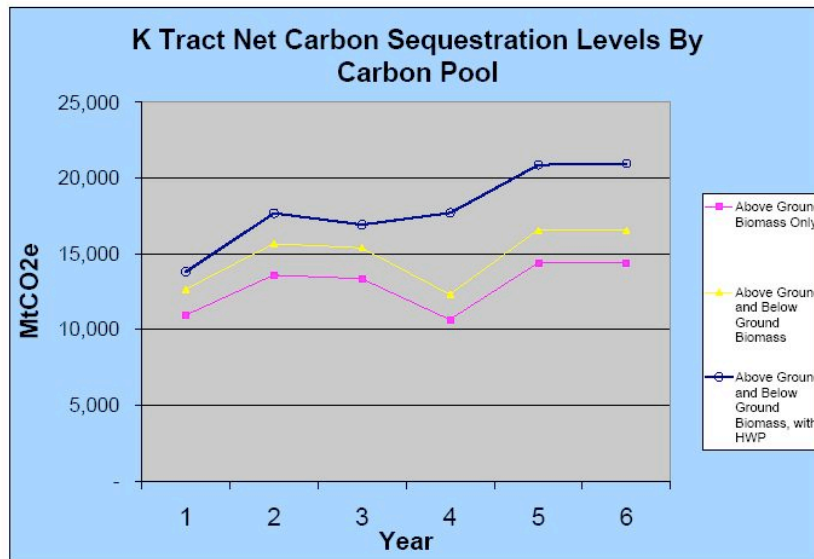
- Soil carbon is stable in sustainably managed forests
- 6.5% interest rate to move cash flows to 2006.
- No land sales or catastrophic events occur during the project period.
- Annual verification
- Baseline was established using base year approach
- No “banking” of credits occurs during the project (credits are sold when registered).
- 20% Reserve Pool was not sold
- Above ground and below ground biomass was counted
- No harvested wood products (HWP) carbon was in base analysis.

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- Results: (For 6 year Project period of 2001-06)
 - **Start Up** (Fixed) costs: \$1.70 per forested acre
 - **Participation** (Variable) costs: \$7.04 per forested acre

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Summary

- The state of carbon trading and marketing is fluid and rapidly changing.
- Prices on the CCX are > 5x that on the EU ETS, making banking desirable in the short term.
- The decision to participate in carbon market programs will be heavily influenced by factors such as commitment period, set-up costs, market access, inventory needs, and silvicultural treatments.
- The recognition of carbon in long lived harvested wood products (HWP) has a critical impact on the projects' financial performance. HWP must be recognized if managed forests are eligible.

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Summary

- Verification costs represent a significant fixed cost over the project period. Small projects do not require third-party verification.
- Small, slower growing, and/or more aggressively harvested forests may not generate levels of carbon required to offset start-up and participation costs. Economies of scale favor large projects.
- Landowners without a sufficient forest inventory may find the costs for participation in carbon markets prohibitive.

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Challenges for Forestry Offset Projects

- **Ensuring high quality projects**
 - **Additionality** - projects must provide climate mitigation benefits in addition to what have happened without the project
 - **Permanence**
 - Natural disasters
 - Harvested wood products
 - **Leakage** – impacts out side the boundaries of the project
- **Higher costs for forest offset projects:**
 - Set-up, measurement, verification, and reporting
 - Modeling vs look up tables
 - Lookup tables are not workable for managed forests

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